SHORT WAVE DIATHERMY IN SUBDELTOID BURSITIS

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Bursitis, like inflammation elsewhere in the body, is accompanied by pain, tenderness, heat, swelling, and limitation of motion. In the acute stage the pain and tenderness may be very severe; in the subacute types, there may be intermittent pain, only slight tenderness, and limitation of motion may vary from slight to a considerable degree, dependent upon the degree of pathologic change in the sac. If the process has gone on to scar formation, with adhesions or calcification, there will be marked limitation of motion. Trauma, as well as other factors that lower local or general resistance of an individual, may play a causal role. A normal bursa, of course, is indispensable to smooth abduction and rotation of the shoulder joint. In a series of four hundred and fifty painful shoulders reported by King and Holmes, in seventy-nine and one-half per cent the most frequent cause was pathologic change related to the subacromial bursa. Codman states in part, that in the subacute or adherent type even without treatment, the disability seldom lasts over two years. Other authorities have reported definite evidence of disability even at the end of seven years. From the above statements we can infer that subacromial bursitis is a rather common, discomforting and disabling condition which may last any number of years. A treatment for this condition that does not require hospitalization, is painless, clean, safe, easily applied, and capable of reducing disability to a minimum certainly is ideal. In physical therapy we have the method that meets with all these requirements.

I have followed and treated one hundred cases of subdeltoid bursitis within the last six years. Among the group, 99 were subdeltoid or subacromial and one was subcoracoid. The entire group manifested calcification of varying degree by x-ray examination. The average duration of the affection before being referred to me for treatment was from one to four weeks. All the cases had been carefully worked up previously. The diagnosis had been definitely established, various forms of classic treatment were given and found wanting, including rest, splints, slings, internal medication (opiates and salicylates), external heat, massage, manipulation, aspiration, intravenous sodium cacodylate injections, novocaine injections into bursa, and surgery (drainage, currettement, or both).

I shall briefly touch on the various types of treatment along physical lines that have been used with some success: Moist heat, poultices, hydrotherapy, superficial dry heat (incandescent, tungsten, carbon filament, or infra-red lamp radiation), conventional diathermy alone or followed by galvanic ionization of sodium chloride, massage, manipulation and re-educational exercises. Many conservative, competent observers have reported excellent results with diathermy (with or without galvanism). Last but not least, I shall dwell upon the technic followed with the group of patients that I am reporting at this time. In my series, the 100 patients were divided into two equal groups. All patients received short wave radiation through the affected part with air vibration massage, manipulation and re-educational exercises for home use when the acute symptoms had subsided (pain, ten-

derness, and muscle spasm). Alternate cases received galvanic ionization in addition. The only contraindication to diathermy (long or short wave) is the presence of a purulent exudate which has been determined by general symptomatology or by local aspiration. In this group, surgery is definitely indicated.

Technic

The apparatus used was a 24 meter wavelength type. The patient was instructed to remove all clothes from the affected part He was placed in a position that was found most comfortable to him, recumbent or sitting, with the elbow of the affected arm flexed and abducted resting on pillows. A rubber insulated inductance pad (electrode) covered by one inch of towelling or cotton wadding was interposed between it and the skin of the scapular region. Another pad of same type and size similarly prepared was placed in front of the affected shoulder, held in place by a sand bag. The current was then gradually turned on and adjusted until the patient felt a soothing, comfortable warmth or glow through the part under treatment. At all times certainty was had that the patient is comfortable with no prickling or burning sensation anywhere beneath the electrodes. I have been able to give from 700-1500 ma. of current at each treatment with low voltage. This treatment was given for twenty minutes. Then the anterior pad was removed and a rubber cuff condenser electrode was applied around the arm just below and humeral insertion of the deltoid muscle and treatment was repeated with this "hook-up" for twenty minutes more. The latter part of treatment just described was found especially useful and indicated in those cases where pain was referred to the upper arm and forearm. The affected part was then wiped dry of perspiration and rubbed with warm alcohol.

In the fifty alternate patients on whom galvanism was used, the procedure was as follows: Two moist canvas asbestos rubber backed electrodes were connected to a galvanic generator, the one attached to the negative pole was soaked in two per cent sodium chloride solution and placed on the shoulder in front and the positive pad was placed diametrically opposite on the shoulder in back as in the first application of the pads for diathermy. The galvanic current was gradually turned on until the patient felt a gentle, comfortable, soothing, tingling sensation of the skin under the pads. The dosage in our cases ranged from 10-20 ma. for about twenty minutes, the size of the pads being four by six inches. The part was then wiped dry and examined again for any evidence of skin irritation or burns. Everything being satisfactory and the patient having reached that stage in his condition where he had been relieved of his acute suffering (muscular spasm, tenderness, and pain), gentle air vibration massage and active and passive motion of the shoulder were administered, together with gentle abduction, adduction, rotation, and gradual stretching. The patient was advised to rest and cool off before going out in the street, especially in inclement weather.

Treatments were given daily for the first week, then every other day for the next week, then twice weekly for the next two to four weeks or until functional restoration had been achieved. In this group there were ten patients, two of them physicians, who had had a previous subdeltoid bursitis treated by surgery. When the same condition affected the other shoulder, they refused surgery because they were not satisfied with the previous end result. They preferred a course of conservative physical therapy first, stating that if results were not satisfactory, then and then only would they consent to any further surgical intervention. Fortunately for them, our treatment was of great help.

Comment

1. Short wave therapy is a very satisfactory and conservative method in the treatment of subdeltoid bursitis and should be given a definite trial before other extreme measures are instituted.

2. Pain is relieved by three to six treatments.

3. Entire functional restoration is attained by ten to twelve treatments.

4. Chlorine ionization with negative galvanism was of no particular value in the solution of calcified deposits. The only values that I found for galvanism were in cases with pain referred to the arm, with beginning atrophy or nutritional disturbance in the musculature about the joint, in which it manifested vasodilator action on the capillaries of the skin, thus perhaps prolonging the hyperemia produced by short wave diathermy.

5. Short wave radiation offers a definite, logical, scientific approach in the treatment of this condition, reducing the period of pain and disability to one-third the time of other classic methods, and resulting in a good functional restoration. The effect, in my opinion, is due to the deep heat and profound active hyperemia in the tissues stimulating circulation, with relaxation of musculature (thus reducing spasm), increase of drainage, removal of waste products of exudation, relieving tension on the walls of the bursa and pressure upon sensory nerve ends. There is also said to be an increased leucocytosis and phagocytosis in cases with an infective basis, simulating nature in the process of inflammation and acting as a very useful adjunct. When the pain has been relieved, massage (active and passive), manipulation, and restorative exercises further aid in the rehabilitation of the injured member.

6. Disappearance of calcification is not a criterion as to whether or not a satisfactory result has been accomplished. Numerous observers report many patients who accidentally have been found to have calcification without having manifested any symptoms pointing to an affected bursa. Calcification must have been present in a dormant state for many years previous. Twelve of this series, upon discharge, were normal so far as subjective, objective, and functional symptoms were concerned, yet despite conscientious and active treatment no apparent reduction of calcified deposit was evidenced by x-rays. (A possible explanation by some authorities has been that the deposit consisted of fat and cholesterol rather than lime.)

7. Not one in this group at any time required any vigorous manipulation or breaking up of adhesions under anesthesia or surgery, as has been advocated by others.

8. The only contraindication to the use of diathermy (long or short wave) could be the definite presence of a purulent exudate in the sac.

Summary

The constant use of various physical measures in the treatment of various diseases and injuries related to industry over a period of 16 years on thousands of patients has convinced me that my results obtained with short wave therapy have been far superior for the following reasons:

1. Ease and simplicity of application.

2. Greater power of penetration and greater volume of current used under proper technic.

3. Duration of treatment decreased; intervals increased (economic factor in a busy clinic).

4. All things being equal, the shorter the wavelength and the greater the frequency, the deeper the penetration.

5. The cuff and cable (coil) method of administration was far superior to the pad method for depth effect.

6. In twenty-five thousand short wave treatments, given to both animals and men over a period of four years, under my supervision, not a single burn has occurred, while with conventional diathermy, despite greatest caution we have had some burns.

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